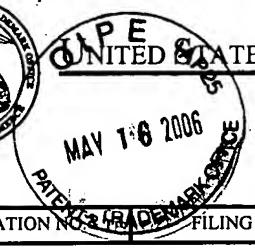
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/069,742	02/26/2002	Wilhelmus Franciscus Johannes Verhaegh	NL 000357	5245

7590 05/09/2006

US Philips Corporation
Intellectual Property Department
580 White Plains Road
Tarrytown, NY 10591

EXAMINER	
KRISCIUNAS, LINDA MARY	

ART UNIT	PAPER NUMBER
3623	

DATE MAILED: 05/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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JOURNAL OF CONSTRUCTION ENGINEERING AND MANAGEMENT

Abstract

Resource Leveling of Linear Schedules Using Integer Linear Programming

J. Constr. Engrg. and Mgmt., Volume 124, Issue 3, pp. 232-244 (May/June 1998)

Kris G. Mattila

Asst. Prof., Michigan Technological Univ., Dept. of Civ. and Envir. Engrg., 112 Dillman Hall, 1400 Townsend Dr., Houghton, MI 49931-1295. E-mail: mattila@mtu.edu.

Dulcy M. Abraham

Asst. Prof., Purdue Univ., Div. of Constr. Engrg. and Mgmt., School of Civ. Engrg., 1294 Civ. Engrg. Bldg., West Lafayette, IN 47907-1294. E-mail: dulcy@ce.ecn.purdue.edu.

Since the early 1960s many techniques have been developed to plan and schedule linear construction projects. However, one, the critical path method (CPM), overshadowed the others. As a result, CPM developed into the powerful and effective tool that it is today. However, research has indicated that CPM is ineffective for linear construction. Linear construction projects are typified by activities that must be repeated in different locations such as highways, pipelines, and tunnels. Recently, there has been renewed interest in linear scheduling. Much of this interest has involved a technique called the linear scheduling method (LSM). Only recently has there been the ability to calculate the controlling activities of a linear schedule, independent of network analysis. Additional research needs to be done to develop some of the techniques available in CPM into comparable ones for linear scheduling. One of these techniques is resource leveling. This paper uses the vehicle of a highway construction project to present an integer linear programming formulation to level the resources of linear projects.

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doi:10.1061/(ASCE)0733-9364(1998)124:3(232)

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Office Action Summary	Application No.	Applicant(s)	
	10/069,742	VERHAEGH ET AL.	
	Examiner	Art Unit	
	Linda Krisciunas	3623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 February 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 February 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *2/26/02 & 7/18/02*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. The following is a Non-Final Office Action in response to the application filed February 26, 2002. Claims 1-10 are pending. The Examiner notes the preliminary claim amendments filed February 26, 2002.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-10 are rejected under 35 U.S.C. 102(e) as being anticipated by Mahapatro (US 6,571,215).

As per claims 1 and 6, Mahapatro teaches a method of determining a schedule for executing tasks requiring a plurality of resources (column 5, lines 11-15), comprising the steps of constructing a set of constraints from given requirements of each task and from given limitations on each resource (column 5, lines 50-57, where the constraints are associated with the tasks and how the resources are assigned to the tasks and the work-amount that the resource must perform); determining for each task a relative start time, a relative ending time and an assignment of resources, based on the constraints from said set (column 6, lines 33-44, where the start time and completion time of tasks that are dependent upon other tasks is identified. The fact that the tasks are dependent

upon other tasks means the start and end time are relative, with respect to the dependent tasks. The resources are assigned to the tasks as noted in column 6, lines 45-60); determining for each task an absolute starting time, an absolute ending time and a collection of times and associated task processing speeds, based on the determined relative starting time, relative ending time and assignment of resources for each task, minimizing any violation of the constraints from said set (column 6, lines 45-67, where the items in the third group that are not dependent upon another task are scheduled and assigned their resources. These have absolute start and completion times since they are not dependent upon another task, but must still be schedule with the dependent tasks in mind so that the tasks or assignments can be finished by the required date. Scheduling takes place by following the priority listing taught by Mahaparto whereby the priorities would include the constraints as previously mentioned in column 5, lines 54-57. The task processing speed or work-amount or duration is taught in column 12, lines 15-17.); and determining the schedule, comprising for each task the determined absolute starting time, absolute ending time, collection of times and associated task processing speeds and assignment of resources to the task (column 12, lines 13-27, where the schedule is created based upon the start and completion dates, resources, work-amount and constraints of the system.).

As per claims 2 and 7, Mahapatro teaches defining a sequence of windows, a starting time of a window from said sequence corresponding to one of the relative starting time and the relative ending time of a task, and an ending time of said window corresponding to a starting time of a next window in said sequence; determining an

absolute length of the windows from said sequence, minimizing any violation of the constraints from said set; determining for each window a processing speed for each task and creating for each task a collection of times and associated task processing speeds based thereupon, minimizing any violation of the constraints from the set; and determining for each task the absolute starting time and the absolute ending time from the absolute length of the windows (Claims 2 and 7 cite the same limitations as claims 1 and 6 except for the term window. Paragraph 20 of the specification cites "window widths are easily converted to absolute starting and ending times for the tasks" This term, as defined in the specification, is interpreted by the Examiner to be consistent with the duration of a task, often referred to as a time frame or time window. Therefore the same rejections apply to claims 2 and 7 as cited in claims 1 and 6.).

As per claims 3 and 8, Mahapatro teaches determining whether any violation of the constraints has occurred, and if so, determining at least one of a new relative starting time for a task, a new relative ending time for a task, and a new assignment of a resource to a task (column 5, lines 45-67 and column 6, lines 1-32, where the program of the system is such that the constraints are used to schedule the tasks and their respective resources, therefore the program verifies that nothing is scheduled in violation of the constraints. The start and completion time of tasks are given to the tasks based upon these constraints); and executing step c (column 6, lines 45-67, where the items in the third group that are not dependent upon another task are scheduled and assigned their resources. These have absolute start and completion times since they are not dependent upon another task, but must still be schedule with the dependent

tasks in mind so that the tasks or assignments can be finished by the required date. Scheduling takes place by following the priority listing taught by Mahaparto whereby the priorities would include the constraints as previously mentioned in column 5, lines 54-57. The task processing speed or work-amount or duration is taught in column 12, lines 15-17.).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 4-5 and 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mahaparto (US 6,571,215).

As per claims 4 and 9, Mahaparto teaches determining the absolute length of the windows from said sequence comprises solving a linear programming problem (Linear programming problems are ones where the objective function and constraints are linear. These programs are often used for optimization solving scenarios. Mahaparto teaches CPM scheduling which is a linear programming technique as noted in "Resource Leveling of Linear Schedules Using Integer Linear Programming" by Mattila et al, Journal of Construction Engineering and Management, vol 124, iss 3, p 232-244, May/June 1998. Mahaparto teaches a linear object function of scheduling consecutive tasks and the constraints utilized are also linear since they deal with time. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to

utilize a linear program with the system of Mahaparto to provide a means for optimizing the assignment of tasks and resources.).

As per claims 5 and 10, Mahaparto teaches determining for each window a task processing speed for each task comprises solving a linear programming problem (Claims 4 and 9 are comparable to claims 5 and 10 except for the substitution of speed of the task for length of the window. The length of the task is equivalent to the duration which is also equivalent to the speed of the task, therefore the same rejection applied to claims 4 and 9 applies to claims 5 and 10.).

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following art also teaches about schedules: Dworzecki (US 5,826,080), Dworzecki (US 5,606,695), Harris et al (US 6,438,704), Kamada et al (US 6,108,683), Jones et al (US 6,003,061), D'Souza (US 6,948,172), Jones et al (US 5,812,844), "Microsoft Project-Plan, Manage and Communicate with Ease" (Microsoft Corporation 1995), www.jdr.com/pdf/ms-proj95-u.pdf, (5 pages); and "Teach Yourself Microsoft Project 2000 in 24 hours" by Sam Pyron, Sams Publishing, May 1, 2000, (28 pages).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Linda Krisciunas whose telephone number is 571-272-6931. The examiner can normally be reached on Monday through Friday, 6:30 am to 3:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tariq Hafiz can be reached on 571-272-6729. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LMK

LMK

May 4, 2006

TARIQ R. HAFIZ
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3600

Form PTO-1449 U.S. DEPARTMENT OF COMMERCE (REV.7-80) PATENT AND TRADEMARK OFFICE	Atty. Docket No. NL 000357	Serial No.
	Applicant Wilhelmus F.J. VERHAEGH et al.	
INFORMATION DISCLOSURE CITATION (Use several sheets if necessary)	Filing Date CONCURRENTLY	Group 3623

U.S. PATENT DOCUMENTS

Ex. Int.		Document Number	Date	Name	Class	Sub-class	Filing Date If Approp.
LK	AA	5 7 3 4 7 2 0	3/31/98	Salganicoff	380	20	
LK	AB	5 7 5 8 2 5 7	5/26/98	Herz et al.	455	2	
	AC						
	AD						
	AE						
	AF						

FOREIGN PATENT DOCUMENTS

		Document Number	Date	Country	Class	Sub-class	Trans. Yes	Trans. No
	AG							
	AH							
	AI							
	AJ							
	AK							

OTHER (Including Author, Title, Date, Pertinent Pages, Etc.)

LK	AL		"An Efficient ILP-Based Scheduling Algorithm for Control-Dominated VHDL Descriptions" by Michael Munch et al.ACM Transactions on Design Automation of Electronic Systems, Vol. 2, No. 4, October 1997, pages 344-364
	AM		
	AN		

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include a copy of this form with next communication to applicant.

Linda Kriscunas May 3, 2006

OIPE JC184
JUL 1 8 2002
PATENT & TRADEMARK OFFICE

Form PTO-1449 (REV. 7-80) U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	Atty. Docket No. PHNL 000357	Serial No. 10/069,742
	Applicant WILHELMUS F. VERHAEGH	
	Filing Date FEBRUARY 26, 2002	Group ~~2161~~ 3623

INFORMATION DISCLOSURE CITATION
(Use several sheets if necessary)

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	AA						
	AB						
	AC						
	AD						
	AE						
	AF						

FOREIGN PATENT DOCUMENTS

		Document Number	Date	Country	Class	Sub-class	Trans. Yes	Trans. No
AK	AG	WO 99 12097	09/1998	PCT (WORLD)	G06F	9/46		X
AK	AH	~~0 6 9 7 6 5 6 A 1~~	~~08/1995~~	~~EUROPE~~	~~G06F~~	~~9/46~~		~~X~~
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	AJ							
	AK							

no translation

OTHER (Including Author, Title, Date, Pertinent Pages, Etc.)

	AL	
	AM	
	AN	

Examiner Linda Kruscenas Date Considered May 3, 2006

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with M 609; Draw line through citation if not in conformance and not considere Include a copy of this form with next communication to applicant.

Notice of References Cited	Application/Control No. 10/069,742	Applicant(s)/Patent Under Reexamination VERHAEGH ET AL.	
	Examiner Linda Krisciunas	Art Unit 3623	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-5,826,080	10-1998	Dworzecki, Jozef	718/103
*	B	US-5,606,695	02-1997	Dworzecki, Jozef	705/8
*	C	US-6,438,704	08-2002	Harris et al.	713/502
*	D	US-6,571,215	05-2003	Mahapatro, Neelamadhaba	705/8
*	E	US-6,108,683	08-2000	Kamada et al.	718/103
*	F	US-6,003,061	12-1999	Jones et al.	718/104
*	G	US-6,948,172	09-2005	D'Souza, David	718/106
*	H	US-5,812,844	09-1998	Jones et al.	718/104
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	"Microsoft Project-Plan, Manage and Communicate with Ease" (Microsoft Corporation 1995), www.jdr.com/pdf/ms-proj95-u.pdf, (5 pages).
	V	"Teach Yourself Microsoft Project 2000 in 24 hours" by Sam Pyron, Sams Publishing, May 1, 2000, (28 pages).
	W	"Resource Leveling of Linear Schedules Using Integer Linear Programming" by Mattila et al, Journal of Construction Engineering and Management, vol 124, iss 3, p 232-244, (abstract only), May/June 1998.
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Microsoft Project

Microsoft Office Family Member

Plan, Manage, and Communicate with Ease



Designed for Microsoft Windows95

Microsoft Project is the preferred product for comprehensive project management solutions. Now designed for the Windows® 95 operating system, it makes project management a natural part of your everyday business planning. So you can plan, manage, and communicate better to stay on schedule and on budget.

In the fast-paced world of business, anything you try to accomplish on schedule and on budget requires a thorough plan. It requires good management to identify and correct problems before they impact your budget or schedule. And good communication to keep your team focused on the right objectives at the right time. In short, it requires Microsoft Project.

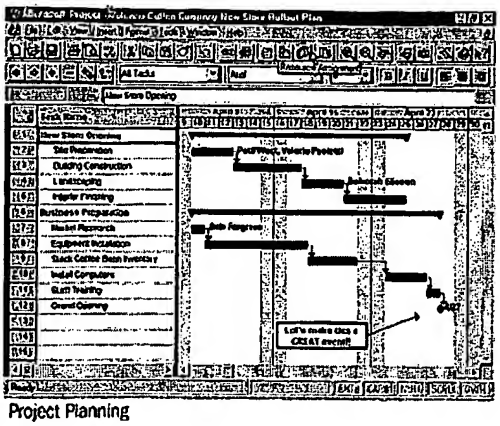
Microsoft Project has been widely recognized for more than five years as the easiest-to-use project management software. A member of the Microsoft Office family, it simplifies the complexities of project planning for you like never before.

Microsoft Project shares data easily with other programs in Microsoft Office, is easy to learn and use, and works in much the same way with common toolbars and commands. Drag-and-drop editing, long filenames, and integration with the Windows 95 operating system make Microsoft Project immediately familiar, and the best project management software for Windows 95.

Beneath this ease of use is a powerful planning, analysis, and management tool that lets you build enterprise-wide, mission-critical project management solutions. Visualize the most complex plans by splitting a project into manageable steps to see in detail how the tasks are related, which are most important to your overall schedule, where bottlenecks will be, and how much the whole project will cost. Or, consolidate several projects to assess shared resources, team workloads, and whether the projects you're planning at one time really make sense together.

You can even communicate the status of projects automatically. Built-in links to Microsoft Exchange make it easy to publish selected attributes of a project—such as when deliverables are due—without involving everyone in the details. Or link to Microsoft Mail, Schedule+, Microsoft BackOffice(TM), or any of the hundreds of add-on programs built around Microsoft Project.

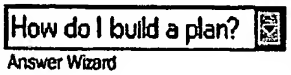
After all, if good project management is at the heart of your business, shouldn't your project management system be there too?



Project Planning

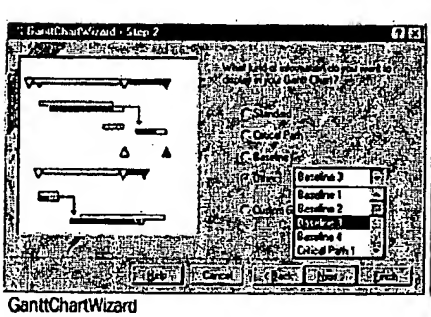
Create and manage realistic plans.

- **PlanningWizards and templates:** Wizards monitor your actions and offer suggestions that can automatically be incorporated into your plan.
- **Answer Wizard:** To get help, just type in a question, and the Answer Wizard gives you the information you need.
- **Outlining:** This helps you organize the details of your project into a manageable structure.
- **Critical Path:** Identify the tasks that risk your project if dates are missed.

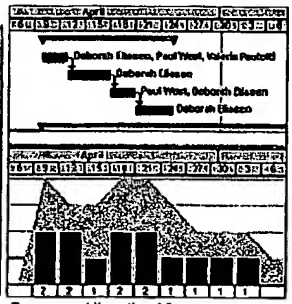


Answer Wizard

- **Drag-and-drop data:** Enter and schedule tasks, assign resources, and establish task links quickly, with your mouse.
- **Filters:** View a subset of tasks in your plan, such as project milestones or tasks assigned to a specific person.
- **Baseline Chart:** Compare your current schedule against your original plan.
- **AutoCorrect:** Your misspellings and typos can now be corrected automatically as you type. Or, create your own list of abbreviations that expand automatically.
- **Resource Tools:** Spot bottlenecks and shortages in advance and balance workloads across tasks or projects.



GanttChartWizard



Resource Allocation View

Integrate seamlessly with your current software.

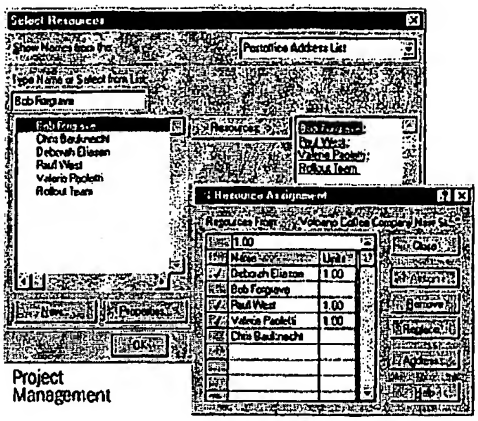
- **Integration with Windows 95:** With long filenames, more intuitive control buttons, and easy desktop shortcuts, Microsoft Project takes full advantage of Windows 95.
- **It's your choice:** Get great 32-bit performance on Windows 95 or Windows NT(TM) Workstation.
-



Workgroup Tools

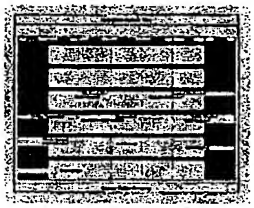
Enhance and facilitate teamwork.

- **Workgroup Tools:** If you have MAPI- or VIM-compliant electronic mail (e-mail), such as Microsoft Mail, you can work efficiently online.

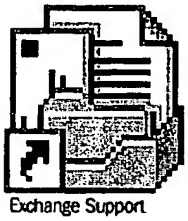

Project Management

  - Route projects to reviewers in Mail.
  - Communicate and delegate new assignments instantly over e-mail with TeamAssign.
  - Collect task status information and keep your schedule current over e-mail with TeamStatus.
  - Have Microsoft Project set task reminders and add tasks to your To Do list in Microsoft Schedule+.

- **Copy Picture:** Take a snapshot of your current project plans and distribute it to anyone in your organization, even if they are not a Microsoft Project user.


Monthly Calendar Report

- **Report Gallery:** Use preformatted reports to show current activities, costs, assignments, and workloads. You can even create your own custom reports for communicating project status.


Exchange Support

- **Exchange support:** Post documents and display custom OLE properties of your project for viewing by group members and people outside your team.

Build powerful custom solutions quickly.

- **Tables, filters, and views:** Work with the information that is most important to you.
- **Macro Recorder:** Create powerful macros to automate routine tasks without any programming.
- **Customization:** Customize menus, toolbars, buttons, appearance of messages between team members, and more.
- **Multiproject Consolidation:** Combine several projects for efficient use of resources.

Inside Microsoft Project

Easy planning and management

- For easy data entry: AutoCorrect, Spelling Checker
- Getting started: Quick Preview, Up and Running Tutorial, Templates, PlanningWizards, GanttChartWizard
- Tasks and resources: 9999 tasks per project, 9999 resources per project, recurring tasks, split tasks
- Multiple projects: Multiproject resource pools, multiproject consolidation (80 projects), subprojects (249 per project)
- Scheduling: Baselines (6), fixed-duration, critical path method (CPM), resource-driven
- Dependencies: FS, SS, FF, SF, leads/lags, partial
- Constraints: ASAP, ALAP, SNET, SNLT, FNET, FNLT, MSO, MFO
- For online help: The Microsoft Network,* Answer Wizard, ScreenTips, Step-by-Step Answers
- Drag-and-drop editing of projects and schedules
- Views: Filters (custom, highlight, wild card), Zoom, Outlining
- Cost accrual (start, end, or prorated)
- Tracking: Fixed costs, percent-complete tracking, work breakdown structure (WBS) codes, timesheets
- Resource management: Part-time assignments, variable resource loading, rescheduling of uncompleted work, resource leveling
- Password protection (two levels)

Comprehensive integration

- With Microsoft Office, drag and drop project data into spreadsheets, presentations, and reports
- With Microsoft Mail, share projects, reports, and task updates in a workgroup over e-mail
- With Microsoft Schedule+, assign task reminders automatically; add tasks to your To Do list
- With Microsoft Access or other ODBC-compliant databases, import and export data

Communicating and reporting

- Calendar reports and working view
- Dependency Gantt Chart and PERT Charts
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- 6 MB of memory for use on Windows 95; 12 MB of memory for use on Windows NT Workstation
- Hard disk space required: 10 MB compact; 20 MB typical; 25 MB custom (maximum)
- One 3.5" high-density disk drive
- VGA or higher-resolution video adapter (SVGA 256-color recommended)
- Microsoft Mouse or compatible pointing device
- Windows-compatible network and MAPI-compliant or VIM mail systems required for workgroup functionality

Options:

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Sams Teach Yourself Microsoft® Project 2000 in 24 Hours

By Tim Pyron

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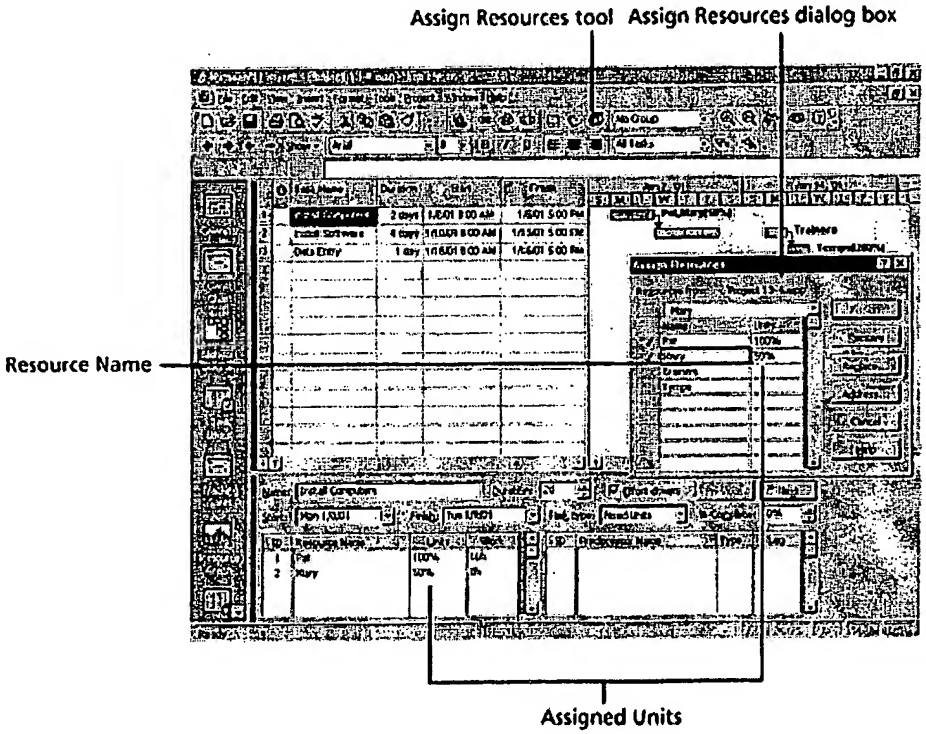
Using the Assign Resources Dialog Box

The Assign Resources dialog box is a handy, versatile tool for basic assignment management. In addition, you can use this dialog box to add resources to the resource pool.



Display the Resource Assignment dialog box by choosing Tools, Resources, Assign Resources or by clicking the Assign Resources tool. Figure 13.4 shows the Assign Resources dialog box over the Task Entry view in the background so you can see how the same field values are displayed differently.

Figure 13.4. Use the Assign Resources dialog box to create task assignments on-the-fly.



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In Figure 13.4, the selected task is Install Computers. If you didn't have the Task Form at the bottom of the screen, you could still tell which resources are assigned to the task by the check marks next to their names in the Assign Resources dialog box. You can see more detail about the assignments (the work) in the Task Form in the bottom pane.

Adding Resources

You can add resources to the resource pool with the Assign Resources dialog box.

To Do: Creating a Resource with the Assign Resources Dialog Box

To add a resource to the resource pool with the Assign Resources dialog box, follow these steps:

1. Select a blank cell in the Name column of the Assign Resources dialog box.
2. Type in the resource and press Enter.
3. Double-click the new resource name to view the Resource Information dialog box.
4. Use the tabs of the Resource Information dialog box to define the values for the resource.
5. Click OK to close the Resource Information dialog box.

Tip

You can add resources directly from your email address book. Click the Address tool on the Assign Resources dialog box to open your email address list and select a name. When you close the address list, Project will add the name to the resource pool.

Assigning Resources

You can assign resources with the Assign Resources dialog box in a couple of ways. You can use the Assign tool or you can drag a resource to a task in the underlying task view.

Note

The underlying view must be a task view and it can't be a form. For instance, you can use the dialog box to assign resources with the Gantt Chart or the Calendar view active, but you can't use it to assign resources if the Task Form in the bottom pane is active.

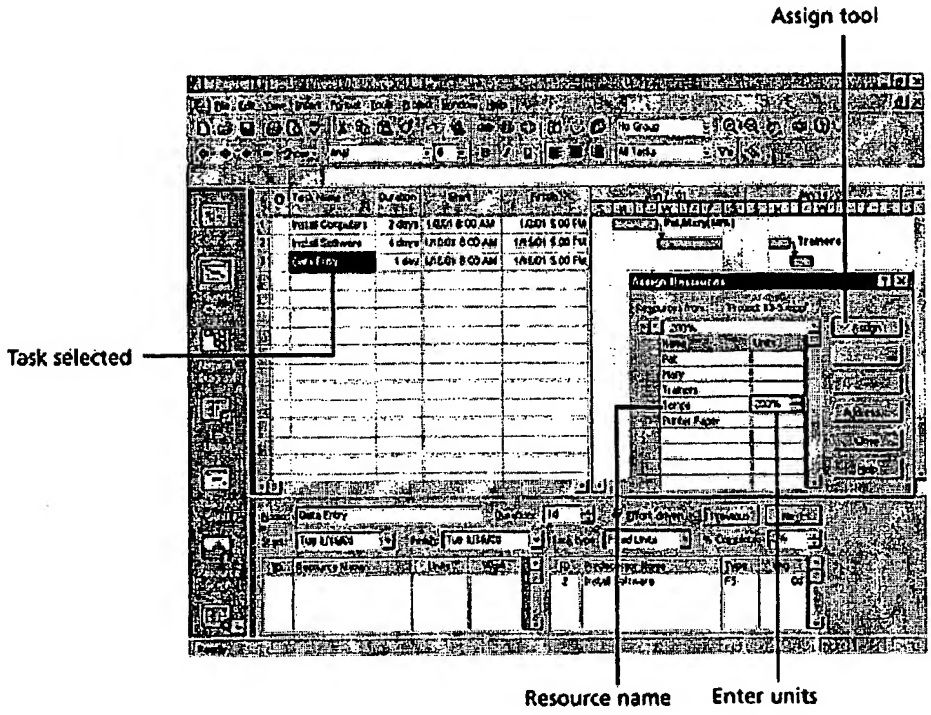
To Do: Assigning Resources with the Assign Resources Dialog Box

To add a resource assignment to a task or group of selected tasks using the Assign tool, follow these steps:

1. Select the task or tasks to which you want the resource assigned. You can use the Ctrl or Shift keys to add additional tasks to the selection. The task Data Entry is selected in Figure 13.5.

Figure 13.5. You can define the units to be assigned for the selected task and resource in the Assign Resources dialog box.

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2. If it's not already displayed, display the Assign Resource dialog box.

3. Select a cell in the row for the resource you want to assign, or select a blank row and type in the name if you are creating a new resource as you assign it. The row for Temps is selected in the figure.

4. Select the Units field and enter the units if you don't want Project to supply the default 100 percent. In the figure, the units will be 200 percent (two temporary employees).

   For material resources, enter the units in decimal format. If it's to be a variable consumption rate assignment, remember to append a slash and a time unit.

5. Click the Assign tool or press Enter to assign the resource and unit information to the selected tasks.

   If multiple tasks were selected for this assignment, they will all receive the same units assignment.

6. If you are adding more resources to the same tasks, select the next resource name to be assigned, type the number of units in the Units field, and select Assign to assign this resource to the selected tasks.

7. You can click the Close button to close the Assign Resources dialog box if you want to hide it; or you can leave it open on the workspace while you work in the underlying views.

Note

When you click the Assign tool on the Assign Resource dialog box, a check mark appears to the left of the resource assigned, as shown previously in Figure 13.4. This check mark will appear only when the assigned task is selected in the underlying view.

With the Assign Resources dialog box, you can also use drag-and-drop to assign resources to tasks. You don't have to pre-select the task to which the resource will be assigned. This option gives you a quick, efficient way of assigning

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different resources to one task at a time.

Caution

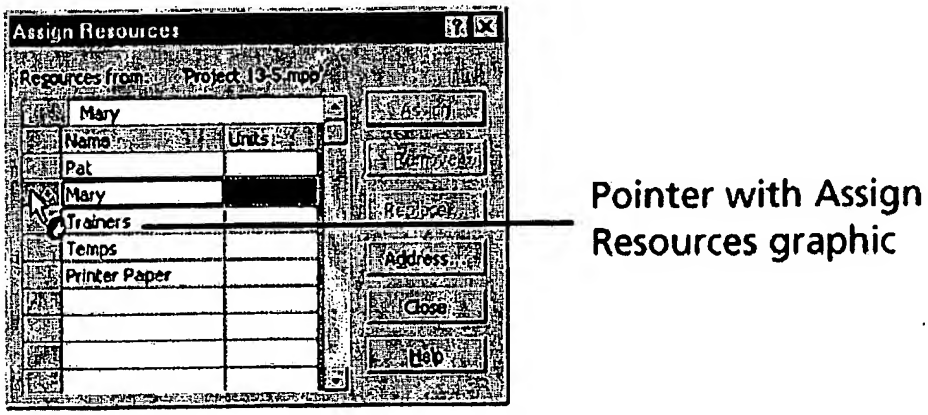
When you drag-and-drop with the Assign Resources dialog box to assign resources to tasks, Project gives you no choice but to use a unit value of 100 percent for the resource assignment you create with this technique. Of course, you can change the units assignment later, but that will lead to other automatic calculations that might not be intended, such as a change in duration.

To Do: Assigning Resources to a Task by Using Drag and Drop

To assign resources to a task by using the drag-and-drop feature, perform the following steps:

1. Display a task view such as the Gantt Chart.
2.  Display the Assign Resources dialog box by clicking the Assign Resources tool.
3. Select the resource by clicking in the Name field.
4. Position the mouse pointer in the gray rectangle just to the left of the resource name. The mouse pointer changes to display the Assign Resources graphic (see Figure 13.6).

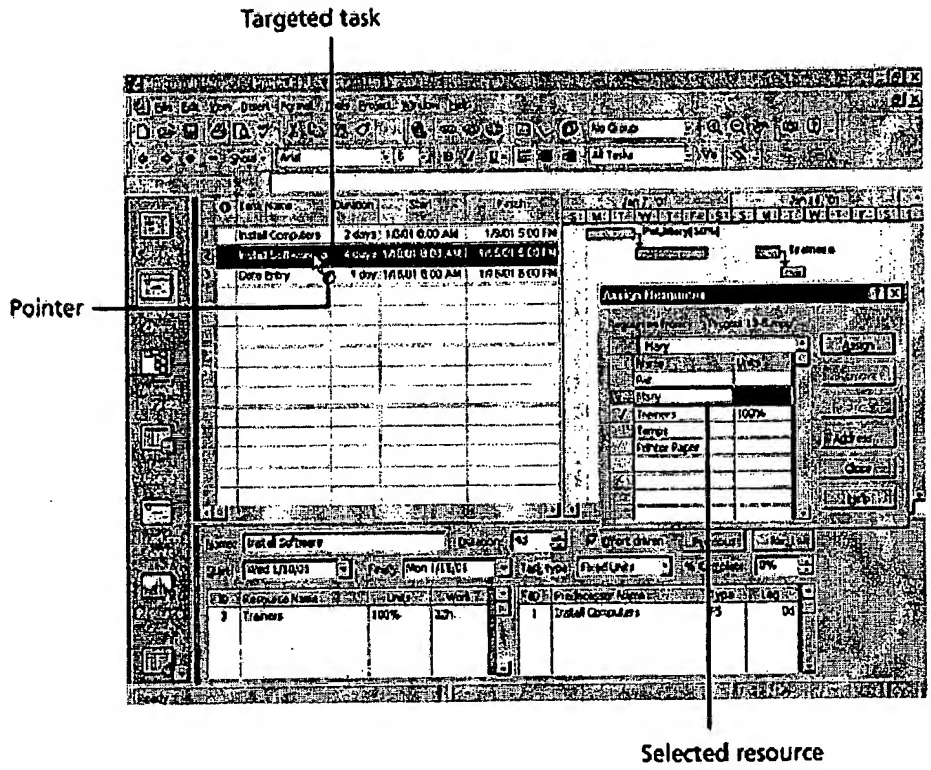
Figure 13.6. When you point to the gray area to the left of the resource name, the pointer appears as a selection arrow with the Assign Resource graphic attached.



5. Hold down the mouse button. A plus sign will appear next to the pointer graphic.
6. Now drag the mouse pointer over the task to which the resource should be assigned. Project will highlight the entire task row (see Figure 13.7).

Figure 13.7. Drag the pointer over the task to be assigned.

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7. When the task is highlighted, release the mouse button to assign the resource.

Tip

To assign multiple resources to a task by using the drag-and-drop feature, select multiple resource names in the Assign Resources dialog box. When you drag the mouse pointer to the task, all the selected resources are assigned at once.

Removing Resource Assignments from One or More Tasks

You can use the Assign Resources dialog box to remove assignments as well as add them.

To Do: Removing a Resource Assignment from a Task

To remove a resource assignment from one or more selected tasks, follow these steps:

1. Select the task or tasks in the view that have resource assignments you want to remove.
2.  Display the Assign Resources dialog box by clicking the Assign Resources tool.
3. Select the resource or resources you want to remove from assignments by clicking the check mark or the resource name.

Note

Resources assigned to the selected task are identified by check marks to the left of the resource name. If a

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check mark is gray instead of black, your task selection in the view includes some tasks that have that resource assigned to them and some that do not.

4. Choose the Remove tool. The resource (or resources) selected in the Assign Resources dialog box are removed from any assignments they might have with the task or tasks selected in the view.

Tip

You can remove a group of resources in one step if you select all of them before clicking the Remove tool.

Changing Resource Names and Unit Assignments

Use the Assign Resources dialog box to change the resource name or unit assignment for tasks. Each resource name and unit assignment must be replaced individually.

To change units assigned for a resource, select the task and then edit the unit assignment in the Assign Resources dialog box. When the new unit assignment is entered, click the Replace tool. Remember, however, that changing the units usually changes either the task duration or the assigned work. So, check what happened to the task if you use this procedure.

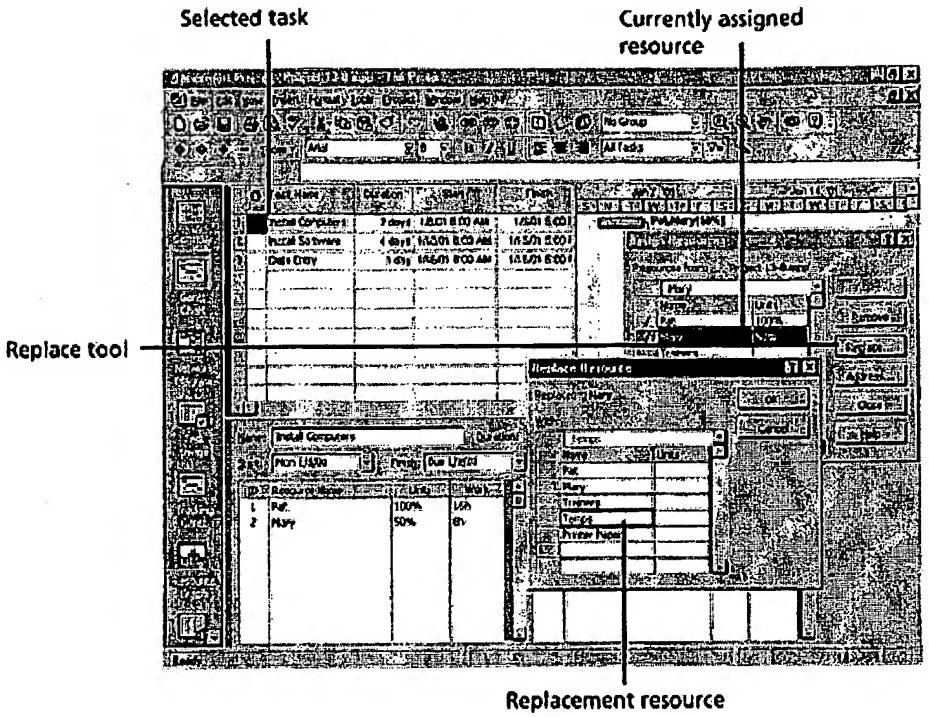
To substitute one resource for another resource in an assignment, select the currently assigned resource and then choose Replace. Then, in the Replace Resource dialog box, select the new resource name.

To Do: Replacing an Assigned Resource with Another

To replace an assigned resource with another resource, follow these steps:

1. Select the task or tasks for which you want to substitute resources in an underlying task view.
2.  Display the Assign Resources dialog box by clicking the Assign Resources tool.
3. Select the resource name to be replaced. (It will have a check mark next to it.)
4. Click the Replace tool. Project will display the Replace Resource dialog box over the Assign Resources dialog box (see Figure 13.8). I moved the new dialog box aside in Figure 13.8 so you can see both.

Figure 13.8. A second dialog box, Replace Resource, lists replacement resources from which to choose.



5. Select the new resource name.

6. Select the Units field for the selected resource and enter the value, if you want it to be changed. Otherwise, the new resource will have the same assigned units as the original resource.

7. Click OK.

Note

You can't add a new resource in the Replace dialog box; if you're going to substitute a new resource you must define it before clicking the Replace tool.

To Do: Replacing the Number of Units in a Resource Assignment

To replace the number of units in a resource assignment, follow these steps:

1. Select the task in the view. You can select multiple tasks if you plan to make an identical assignment change in all of them.

   Remember to adjust the task type if you want to change how Project will recalculate duration or work when you complete this procedure.

2. Display the Assign Resources dialog box by clicking the Assign Resources tool.

3. Select the Units field for the resource whose assignment is to be changed.

4. Type the new unit assignment for the resource.

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5. Click Close or press Enter.

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Working with Constraints

In Hour 5, "Defining When Project Can Schedule Tasks," you looked at th be scheduled according to a modified base calendar in order to accurately r work interruptions. Another category of special scheduling instructions yo Project are those that tell Project about deadlines and fixed dates for indivi tasks.

A *constraint* is a limitation on the range of dates when a task can be sched

When you add a new task to a project that is scheduled from a fixed start d automatically assigns the default constraint that the task is to be scheduled the start of the project. When you add a task to a fixed finish date project, I constraint that the task is to be scheduled as late as possible before the end two relatively mild constraints, if they can be considered constraints at all. however, when you need to be more restrictive, as shown in the following

- You might have contractual agreements that bind the start or finish o date. If the project involves work for a customer, there could be spec deadlines defined in the contract. Or, your agreement with a contract stipulate the earliest date you can expect completion of the parts of tl responsible for.

- Government regulations could impose date constraints. For instance, taxes must be filed no later than designated dates, and environment l compliance dates.

- Your own internal management might impose arbitrary deadlines for

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project.

All these special scheduling instructions, including as soon or as late as po: Project by defining a *constraint type* for the task and, when appropriate, a c

Understanding the Types of Constraints

The eight constraint types are described in Table 7.1. The order of the listir alphabetical (as it will be when you pick a constraint type on the screen), b you understand the constraint types. The abbreviations are occasionally fou texts and are included here just for reference.

Table 7.1. The Constraint Types in Microsoft Pr

Constraint Type	*Description*
As Soon As Possible (ASAP)	Marks a task as essentially unconstrained. There the task.
As Late As Possible (ALAP)	Delays the task as long as possible, without hold project. There's no constraint date for the task.
Start No Earlier Than (SNET)	The task can't start before the defined constraint scheduled to start on or after that date.
Finish No Earlier Than (FNET)	The task can't finish before the defined constrain scheduled to finish on or after that date.
Start No Later Than (SNLT)	The task must be scheduled to start on or before date.
Finish No Later Than (FNLT)	The task can't finish any later than the defined cc scheduled to finish on or before that date.
Must Start On (MSO)	The task must start on the defined constraint dat
Must Finish On (MFO)	The task must finish exactly on the de date, not earlier or later.

Note

Summary tasks can only be assigned a few of the possible constraints: Possible, Start No Earlier Than (typically used in projects that are sch finish date), and Finish No Later Than (in the more common case of p from a fixed start date, this prevents the summary group from slipping

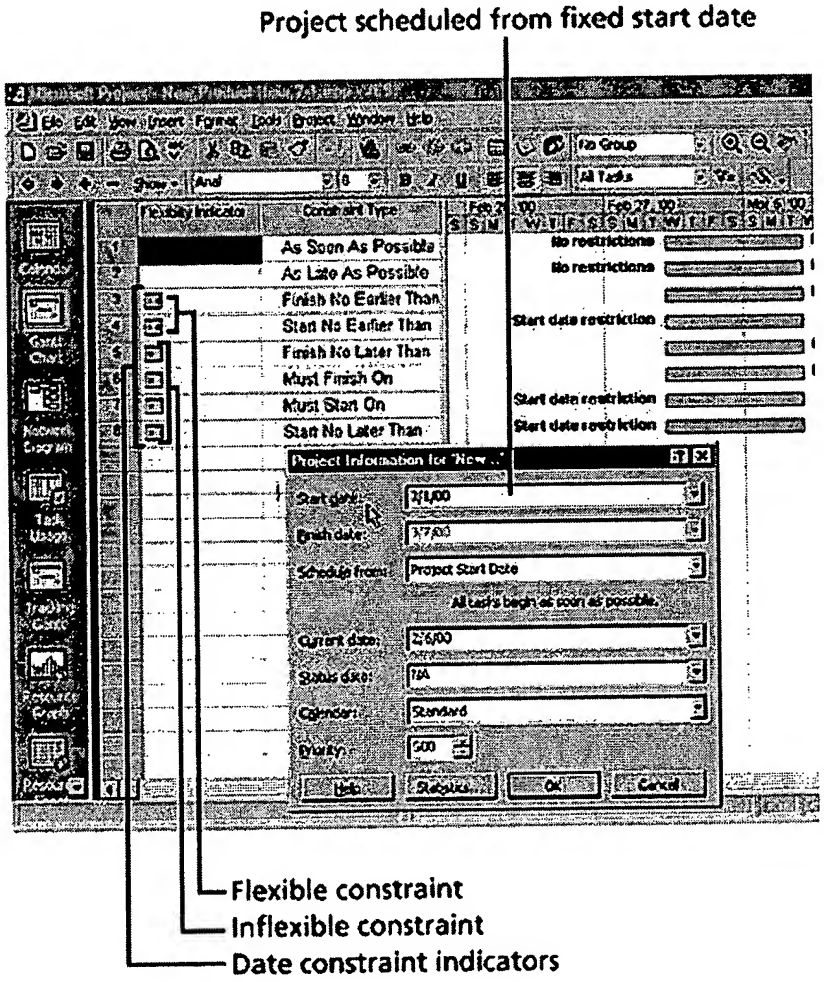
Flexible and Inflexible Constraints

When a task has a constraint type other than As Soon As Possible or As La see an icon in the Indicators field (see Figure 7.1). These icons resemble lit

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a red or a blue dot in the icon. The red dots indicate an *inflexible* constraint indicate a *flexible* constraint.

Figure 7.1. All constraints except As Soon As Possible and A display special indicators.



Inflexible constraints are those that can potentially create scheduling confli barriers to Project's ability to schedule all your tasks while honoring the co *constraints* are those that are unlikely to create problems with the schedule

Predecessors other than Start-to-Finish tend to push successor tasks to later projects with a fixed start date. If a successor task has an inflexible constra exists when the predecessors try to push the task past the constraint date.

In projects with fixed finish dates, the predecessors tend to push successor and a scheduling conflict arises if the predecessors try to push the successo than the inflexible constraint date.

All constraints restrict Project's freedom to schedule tasks to some degree, are called that because they can potentially keep Project from scheduling ta instructions require. Whether a constraint is inflexible depends on the cons

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the project is scheduled from a fixed start date or a fixed finish date.

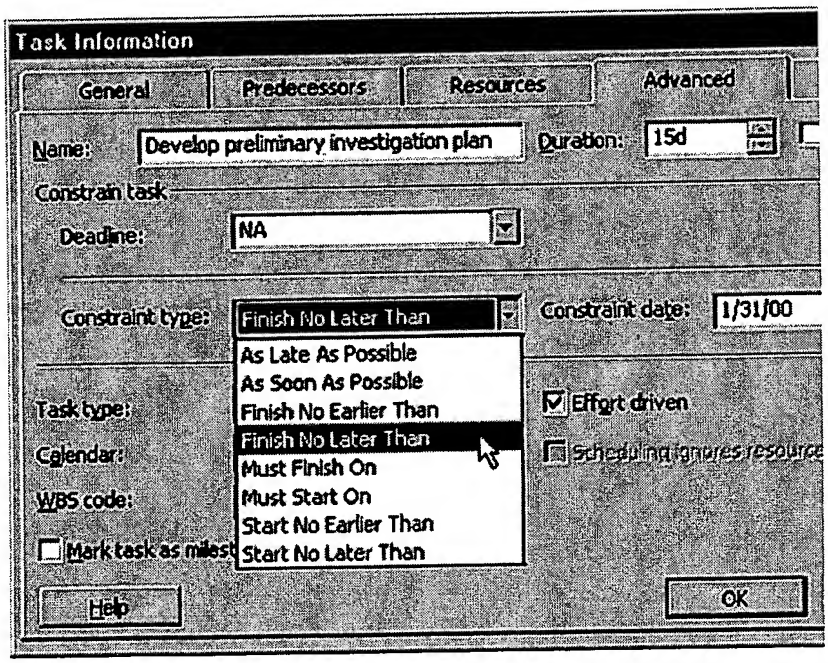
- When projects are scheduled from a fixed *start* date, Project generall schedule toward later and later dates to accommodate all the linked t constraint types are those that might keep Project from rescheduling they are the Must Start On, Must Finish On, Start No Later Than, an types.

- If the project is scheduled from a fixed *finish* date, Project has to pus earlier dates to get everything done by the finish date. For a fixed fin inflexible constraints are those that might prevent Project from resch dates—they are Must Start On, Must Finish On, Start No Earlier Tha Than.

Creating Task Constraints

You can enter task constraints in the Task Information dialog box. In Figur "Develop preliminary investigation plan," is to be constrained to finish no l because any further delay would cause the product to come to market too l

Figure 7.2. Choose the constraint from the type entry list on t the Task Information dialog box.



To Do: Entering Task Constraints

To associate a task with a specific date, follow these steps:

1. Select the task you want to constrain.

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2.  Choose Project, Task Information, or click the Information buttoı toolbar to display the Task Information dialog box.

3. Select the Advanced tab.

4. From the drop-down list in the Constrain type field, select the constra Figure 7.2).

5. In the Constrain Date text box, enter the constraint date, if necessary. drop-down date picker to set the date. The As Soon As Possible and A constraints do not require a constraint date, but all others require a dat

6. Click OK to close the dialog box.

Tip

While you have the Task Information dialog box open, it's a good ide the task indicating why the constraint was set. This gives you a remin sharing the project file with colleagues, gives them important informa note to the task, simply click the Notes tab and type the note in the Nc

To remove a constraint, change the constraint type to As Soon As Possible projects or to As Late As Possible for fixed finish date projects. When cha like this, any constraint dates that were set will be deleted by Project when the dialog box.

Caution

As tempting as setting date markers may sound, you should avoid pla unless absolutely necessary. Otherwise, you'll find yourself having to ways to work around them, or you'll find them getting in your way as the duration of the overall project.

Setting task deadlines instead of task constraints may serve your need section "Recording Deadlines" later in this hour.

There are several other ways you can set constraints, usually unintentionall

- If you *enter* a date in the Start or Finish field of the task, Project mak albeit a flexible constraint. In a fixed start date project, typing a Start Project to set a Start (or Finish) No Earlier Than constraint.

- If you use the mouse to *drag* a task bar to a later date, Project assign

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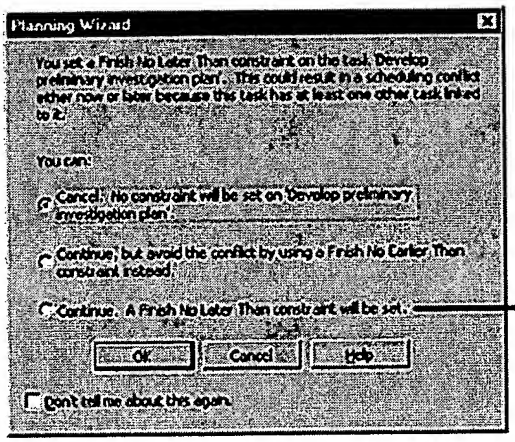
Than constraint type and sets the constraint date to be the changed ta

- If you use the mouse to *extend* a task bar to a later finish date, Projec No Earlier Than constraint type and sets the constraint date to be the

You should generally avoid entering specific dates for tasks unless they rea Project calculate the dates for you. Project is generally not free to reschedu optimize your schedule.

When you attempt to apply an inflexible constraint to a task that has predec Planning Wizard warns you that the constraint could potentially cause a scl asks you to decide whether to continue (see Figure 7.3). The Wizard's dialc you three choices:

Figure 7.3. If an inflexible constraint is entered for a task with p warns you and gives you a chance to change you



- Cancel. No constraint will be set. This is the default selection, and it' the Cancel button. So if you don't change the selection, you will fail whether you click OK or Cancel.

- Continue, but set a flexible constraint, one suggested by Project, inst constraint you requested.

- Continue, forcing Project to set the inflexible constraint, despite any conflicts.

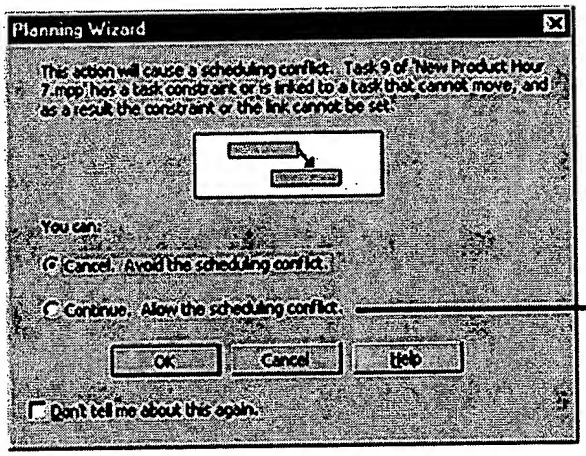
Tip

This is one time you don't want to be in a hurry. The Planning Wizard you avoid problems. Take the time to thoroughly read and understand conflict warnings. (Instead of saying to yourself, "Yeah, yeah" and pr make the warning box go away!)

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If you go ahead and apply the constraint and it does in fact create a schedul immediately or later, because of changes in the schedules for predecessor t another Planning Wizard warning that a conflict is about to occur (see Figu now are simply to cancel the action and avoid the conflict, which is the def continue and allow the scheduling conflict. You must select the Continue o to go ahead with the change you requested.

Figure 7.4. When a scheduling conflict is imminent, the Planni a chance to cancel the action that would caus



You *must* c
the schedu
will be can

If you proceed with a change that creates a scheduling conflict, you have tc somehow (see the next section) because it's an indication that your project defined.

Note

You get only one Planning Wizard warning about each scheduling coi you create a conflict and don't deal with it right away, you will have tc your own at some later point. The next section shows you how to find scheduling conflicts.

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By Tim Pyron
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Adjusting the Default Working Day

If you define the fixed start or finish date for the project, or if you type in a task to start or finish, and you don't include the time of day with the date, N the default start time to any start date entry and the default end time to any feature can create a nuisance for you if the default values don't match the a workday for your organization.

Recall from Hour 4 that the start and end times Project uses for working da choosing Tools, Options, and clicking the Calendar tab. Figure 5.1 should l

Figure 5.1. Change the default start and end of daily working t workplace.

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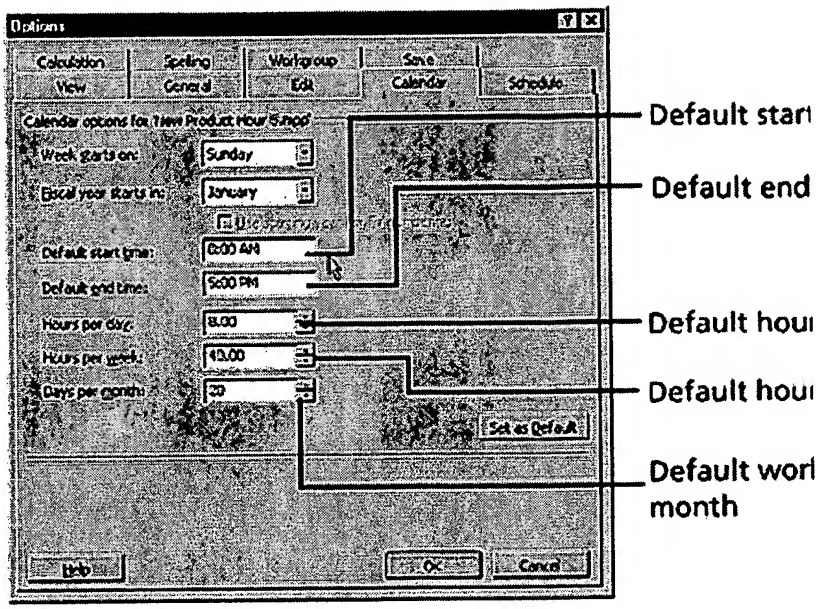
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Caution

When you change the default start and finish times of day, Microsoft I apply those new times to any existing task dates or calendar definition That's why you should make sure these times are set correctly for you make them the default for all future project documents early in your c Microsoft Project.

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2.	Setting the Start or Finish Date for the Project	Sams Teach Yourself Micr Hours By Tim Pyron
3.	Starting a New Project File	Sams Teach Yourself Micr Hours

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Setting the Start or Finish Date for the Pro

As you saw in Hour 3, "Starting a New Project and Working with Tasks," a scheduled from a fixed start date or a fixed finish date. New projects are, b from the beginning of the work day on the current date (your computer's in fixed start date. So, if you start Microsoft Project at 3:00 p.m. on June 1, 2(tasks in the new document (`project1.mpp`), the tasks are scheduled to sta date—unless you change the project's fixed start date or finish date.

Tip

Even if you don't display the time of day in the date format, Project at time for the start of the work day (normally 8:00 a.m.) to the fixed sta default time for the end of the work day (normally 5:00 p.m.) to the fi section "Adjusting the Default Working Day" in the next hour shows these default times.

Project assigns new tasks a default duration of 1 day (normally, that means hours of work) and schedules an initial start and finish for each new task. I from a fixed start date, Project schedules a new task to start as soon as poss project and to finish at the end of one working day.

If the project is scheduled from a fixed finish date, new tasks are schedule the project finish date. The task's start date is then calculated as one workir finish.

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You must set the fixed start or finish date for the project because the rest of pegged to this date.

To Do: Setting the Fixed Start or Finish Date

To set the fixed start or finish date for the project, follow these steps:

1. Choose Project, Project Information from the menu to display the Pro box.
2. Click the arrow in the Schedule From list box and choose either Proje Finish Date.
3. If you chose Project Start Date, click the Start Date field to enter the f project. If you chose Project Finish Date, click the Finish Date field tc date. Either type in the date or click the arrow to the right of the field the calendar control.
4. Click the OK button to close the Project Information dialog box.

Note

When you want to enter today's date or a date within the next 7 days, words today, tomorrow, or the name of any day of the week, either sp abbreviated (for example, Friday or Fri). Project will replace your tex for the day you typed. For day names, Project uses the next occurrenc the current date. For example, if the current date is Thursday, January type in **9am Monday,** Project will supply `1/8/01 9:00 AM`.

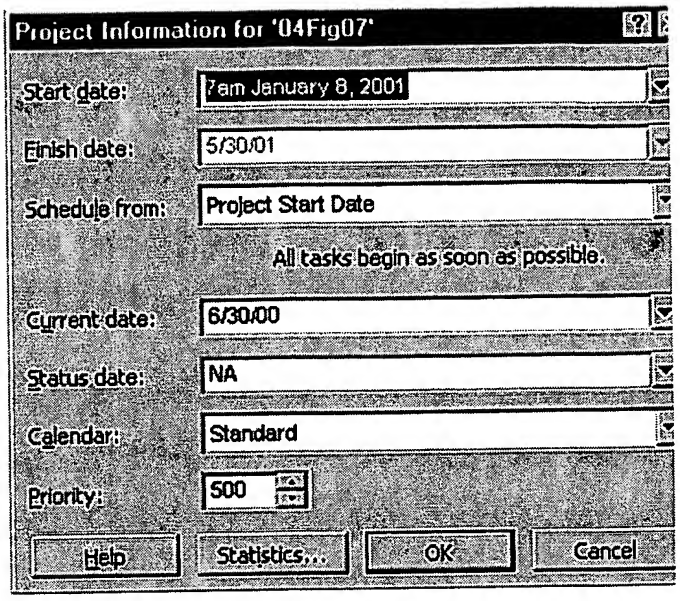
Even if the time of day is not displayed in the current date format, Project time of day (normally 8:00 a.m.) to your entry in the Start Date field or the day (usually 5:00 p.m.) to your entry in the Finish Date field.

Tip

If you want to specify a time of day that differs from the default time time of day either before or after the date. For example, to be sure tha at 7:00 a.m. on January 8, 2001, you could type **1/8/01 7:00 AM** into or you could type **7am January 8, 2001** (See Figure 4.7). Default tim discussed in more detail later in this hour.

Figure 4.7. You should define the date from which the pr must finish when you start a new documen

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If the date and hour you define for the project to start or finish is not a worl are scheduled on the nearest working date and hour. The next section show the working days and hours. In Figure 4.7, the start of the project is being s first working hour on the base calendar is 8:00 a.m., the tasks are actually s a.m.

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2.	Starting a New Project File	Sams Teach Yourself Micr Hours By Tim Pyron
3.	Starting a New Project File	Sams Teach Yourself Micr Hours By Tim Pyron
4.	Editing the Project Information Dialog	Show Me! Microsoft® Offi By Brian Kennemer

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5. Supplying Information for a New Project	Special Edition Using Micr By Tim Pyron
6. Checking the Project's Finish Date	Step by Step Microsoft® (By Carl Chatfield - PMP, Tir
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Summary

In this hour, you completed your look at the underlying settings that contro Default times can be set for those situations where you don't specify exact tasks. A base calendar, typically the Standard base calendar, instructs Proje working days, and which times within those days can be used for schedulir feature to handle tasks with minds of their own—make that calendars of th completed the discussion of how tasks relate to calendar settings; in the ne tasks relate to each other.

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1.	Working with Task Calendars	Microsoft® Office Project By Teresa Stover - Award- instructional designer
2.	Elements of Project Scheduling	Sams Teach Yourself Micr Hours By Tim Pyron

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